

**REMARKS****Claim Amendments/New Claims**

Claim 1 has been amended by specifying a particular group of forensic specimens and by correcting a typographical error. The group of forensic specimens, to wit: fingerprints, gunshot residues, condom lubricants, multi-layer paint chips, fibers, ink samples, and thin layer chromatography plates; finds support in the last sentence of paragraph [03] of the specification. No new matter has been added.

New independent Claim 41 specifies a second particular group of forensic specimens, to wit: ink, dyes, explosives, drugs, tapes, adhesives, pigments, photocopy toner, and laser printer toner. Support for Claim 41 can be found in paragraphs [03] and [76] of the specification as well as throughout provisional patent application S.N. 60/422,604, filed 31 October 2002, from which the present application claims priority as identified in paragraph [01] of the present application. No new matter has been added.

New independent Claim 42 specifies a third particular group of forensic specimens, to wit: blood, semen, saliva, defense sprays, minerals, or stains. Support for Claim 42 can be found in paragraphs [03], [76], and [83] of the specification, as this third particular group of forensic specimens are well-known in the forensic science art and the examples given in paragraphs [03] and [76] are not exclusive. No new matter has been added.

### **Claim Objections**

The Examiner objected to Claims 12, 13 and 15 for containing typographical errors. Each of Claims 12, 13 and 15 is amended herein to address the informalities. Accordingly, the claim objection is now overcome. Additionally, Claims 9 and 16 have been amended to correct typographical errors.

### **Anticipation Rejection**

Claims 1-5, 9-10 and 12-16 stand rejected as allegedly anticipated by U.S. Patent No. 5,689,333 to Batchelder (“Batchelder”). Applicant respectfully disagrees with the basis of the rejection.

Claim 1, from which Claims 2-5, 9-10, and 12-16 all ultimately depend, recites “an electronically tunable filter, for transmitting light of specific, selected wavelengths . . . a computer, said computer being coupled to said electronically tunable filter and said image

sensor . . .” Claim 1 also requires software, running on the computer, for tuning the electronically-tunable filter. Batchelder does not disclose nor suggest an electronically-tunable filter, much less a computer and software for tuning said filter. Accordingly, Batchelder does not anticipate Claim 1.

Batchelder is directed to an optical component for analyzing the Raman spectrum of a sample. The reference discloses a spectroscopic apparatus with two means (*i.e.*, filters) for selecting a frequency of the spectrum (*see* col. 1, lines 60-64). Regardless of the selected means, an important aspect of the Batchelder patent is the use of a filter

means “which transmits the Raman spectrum but rejects Rayleigh scattered light having the same frequency as the input laser beam.” (*see col. 3, lines 6-9; see also col. 3, lines 29-30 and lines 52-54*). To this end, Fig. 1 of Batchelder shows input laser beam 10 transmitted through the dichroic filter 18 to the sample 14. The light reflected from the sample is communicated through the microscope device 20 and the mirror 46 to the dichroic filter 18. Thereafter, the reference discloses two filtering means for the sample-reflected light (*see col. 4, lines 19-21*). In one embodiment, light is directed through the mirrors 74 and 78 to the Fabry-Perot etalon 83 and the filter wheel 84. The Fabry-Perot etalon can slide into and out of the optical path as shown by the arrow 85 (*see col. 4, lines 24-26*). The filter wheel 84 includes several windows each containing a multi-layer dielectric bandpass filter 90 (Fig. 3) covering a different band of the Raman spectrum. Through rotation of the filter wheel 84, a desired filter can be placed in the optical path (*see col. 4, lines 48-59*).

Clearly, the reference fails to disclose or suggest “an electronically tunable filter” as recited in Claim 1. The reference also fails to disclose or suggest a computer coupled to “an electronically tunable filter” for the purpose of tuning the electronically tunable filter to “a specific wavelength or a series of specific wavelengths” as recited in Claim 1. The filters employed in Batchelder are susceptible to problems that can be overcome by the electronically tunable filters described and claimed by Applicant. However, the differences between the filters disclosed in Batchelder and those claimed herein are significant and cannot be overlooked.

For example, the filter-wheel described in Batchelder is susceptible to image drift. As the filter wheel switches from one filter to another (in order to select one wavelength and then another) the image moves relative to the CCD detector. This makes it difficult to generate a reproducible spectrum at each pixel of the CCD image hypercube. Spectrum and image reproducibility is critical in making analytical measurements but particularly critical in making forensic measurements. In forensic examinations it is almost universal to compare data collected from trace evidence under review by the forensic examiner (the "unknown") to data collected on known exemplars. If the instrument being used to collect the comparison data is not reproducible (*i.e.*, a fundamental problem of filter-wheel instruments), the instrument is of limited value for forensics detection.

The Fabry-Perot filters used in the filter wheel have another problem associated with a narrow, angular field of view. As a result of the restricted field of view, it is not possible for the technology described in Batchelder to simultaneously provide high spectral resolving power (narrow spectral band transmittance), a large free spectral range (spectral coverage over hundreds of nanometers), and a large angular field of view. The high spectral resolving power is especially critical for Raman detection. The large free spectral range is especially critical for the detection modes based on non-Raman scattered light (light that is reflected, emitted (implies luminescent), transmitted, and elastically scattered). The non-Raman modes of detection are particularly useful in trace evidence detection as they are highly sensitive, though not highly specific. In other words, the non-Raman modes are good at finding the needle in the haystack, but not exceptional at

identifying the needle unless there are known exemplars that can be used for comparison. Raman is extremely good at identifying the trace evidence, once it has been located on the sample, even without known exemplars. Finally, the Batchelder and Treado references (U.S. Patent No. 6,002,476) exploit the use of Raman (inelastic) scattered light. The instant claims are directed at exploiting the use of reflected, emitted (implies luminescent), transmitted, and scattered light.

For at least these reasons, Batchelder does not anticipate or render obvious the invention recited in Claim 1. Each of Claims 2-5, 9-10 and 12-16 is patentable by virtue of its dependence from Claim 1 without reference to the additional patentable limitations contained therein. Therefore, additional reasons for patentability of each claim need not be discussed.

Accordingly, Applicant respectfully requests the reconsideration and withdrawal of the rejections of Claims 1-5, 9-10 and 12-16.

### **Obviousness Rejection**

Claims 6-8 and Claim 11 stand rejected as allegedly unpatentable over a combination of Batchelder and secondary references to Treado (U.S. Patent No. 6,002,476) and Fillard (U.S. Patent No. 5,770,856). Each of Claims 6-8 and 11 depends, either directly or indirectly, from Claim 1 which as explained is patentable over Batchelder. Nothing in either of the secondary references overcomes the deficiencies of Batchelder as explained above. Accordingly, Claims 6-8 and 11 are deemed patentable by virtue of this dependence without reference to the additional patentable limitations

contained therein. Therefore, additional reasons for patentability of each claim need not be discussed.

Accordingly, Applicant respectfully requests the reconsideration and withdrawal of the rejections of Claims 6-8 and 11.

**CONCLUSION**

Applicant respectfully submits that all of the claims are in condition for allowance.

A notice to this effect is respectfully requested.

If any point remains that is deemed best resolved through a telephonic conversation, the Office is hereby requested to contact the undersigned directly.

Respectfully submitted,



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